## **CLAIMS**

We claim:

1. An integrated circuit amplifier comprising:

a signal input element for receiving an input signal;

a first amplifying element having an input and an output wherein the input is operatively coupled to receive the input signal;

a phase shifting element having an input and an output wherein the input is operatively connected to receive the input signal;

an second amplifying element having an input and an output wherein the input is operatively coupled to receive the phase shifted signal from the phase shifting element;

an impedance transformer element having an input and an output wherein the input is operatively coupled to receive the first amplifier output; and

a signal output element coupled to the output of the second amplifier and the output of the impedance transformer element for providing an output of the integrated circuit amplifier.

- 2. The integrated circuit set forth in claim 1 wherein the integrated circuit is a monolithic microwave integrated circuit (MMIC).
- 3. The integrated circuit set forth in claim 1 wherein the integrated circuit is a radio frequency integrated circuit (RFIC).
- 4. The integrated circuit amplifier set forth in claim 1 wherein the input signal is a radio frequency (RF) input signal.
- 5. The integrated circuit amplifier set forth in claim 1 wherein the phase shifting element is adapted to shift the phase of the input signal approximately 90 degrees.

- 6. The integrated circuit amplifier set forth in claim 1 wherein the impedance transformer element is a quarter wavelength impedance transformer element.
- 7. The integrated circuit amplifier set forth in claim 1 wherein the impedance transformer is a lumped element of inductance and capacitance elements.
- 8. The integrated circuit amplifier set forth in claim 1 wherein the second amplifying element includes a bias circuit for biasing an amplifier transistor having a control terminal, a current-sink terminal, and a current-source terminal.
- 9. The integrated circuit amplifier set forth in claim 8 wherein the bias circuit comprises:

a bias transistor including a control terminal, current-sink terminal, and a current-source terminal;

a first DC input port connected to the current sink terminal of the bias transistor;

a first resonator element operatively coupled to the current-sink terminal of the bias transistor and ground;

a second DC input port connected to the control terminal of the bias transistor;

a diode element operatively coupled to the control terminal of the bias transistor and ground;

a second resonator element operatively coupled to the control terminal of the bias transistor and ground; and

a resistive element operatively coupled to the current source terminal of the bias transistor and the control terminal of the amplifier transistor.

- 10. The integrated circuit amplifier set forth in claim 9 wherein the bias transistor is one of a BJT, an HBT and a FET.
- 11. The integrated circuit amplifierset forth in claim 9 wherein the amplifier transistor is one of a BJT, an HBT and a FET.

- 12. The integrated circuit amplifier set forth in claim 9 wherein the first resonator is an RLC circuit.
- 13. The integrated circuit amplifier set forth in claim 9 wherein the diode element comprises a plurality of diodes.
- 14. The integrated circuit amplifier set forth in claim 9 wherein the second resonator is an RLC circuit.
- 15. The integrated circuit amplifier set forth in claim 9 wherein the resistive element is a resistor.
- 16. The integrated circuit amplifier set forth in claim 9 wherein the resistive element is an RLC circuit.
- 17. An integrated circuit for creating a single chip Doherty-type transformer, the integrated circuit comprising:

means for receiving an input signal;

means for amplifying the input signal to generate a first amplified signal;

means for transforming the first amplified signal;

means for altering the electrical characteristics of the input signal;

means for amplifying the altered signal to generate a second amplified signal; and means to combine the first amplified signal and the second amplified signal.

- 18. The integrated circuit set forth in claim 17 wherein the input signal is a radio frequency (RF) input signal.
- 19. The integrated circuit set forth in claim 17 wherein the means for transforming the first amplified signal is a quarter wavelength impedance transformer.

- 20. The integrated circuit set forth in claim 17 wherein the means for altering the electrical characteristics of the input signal includes means for shifting the phase of the input signal.
- 21. The integrated circuit set forth in claim 17 wherein the means for amplifying the altered signal further comprises an amplifier and a bias circuit adapted to automatically react to an applied power.
- 22. The integrated circuit set forth in claim 17 wherein the means for amplifying the altered signal further comprises means for tailoring a transistor operating point.
- 23. The integrated circuit set forth in claim 22 wherein the means for tailoring the transistor operating point is a bias circuit.